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RENESAS

32

SH7125 CPU Board

M3A-HS25

User's Manual

Renesas 32-Bit RISC Microcomputers
SuperH™ RISC engine Family / SH7125 Group

User's Manual

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Revision History	SH7125 CPU Board M3A-HS25User's Manual

Rev.	Date of Issue	Content of Revision	
		Page	Page
1.0	July 21, 2006	-	First edition issued.

Table of Contents

Chapter1

Overview

1.1 Overview

The M3A-HS25 is the CPU board designed for users to evaluate the functionality and performance of the SH7125 group of Renesas Technology original microcomputers, as well as develop and evaluate the application software for this group of microcomputers. The SH7125's internal peripheral circuit function pins are connected to the extension connector of the M3A-HS25, allowing users to evaluate the timing relationship with peripheral devices using measurement instruments or develop extension boards tailored to suit development purposes. Furthermore, the E10A-USB or the on-chip emulator made by Renesas Technology can also be connected to the M3A-HS25.

1.2 Configuration

Figure1.2.1 shows an example of system configuration using the M3A-HS25.

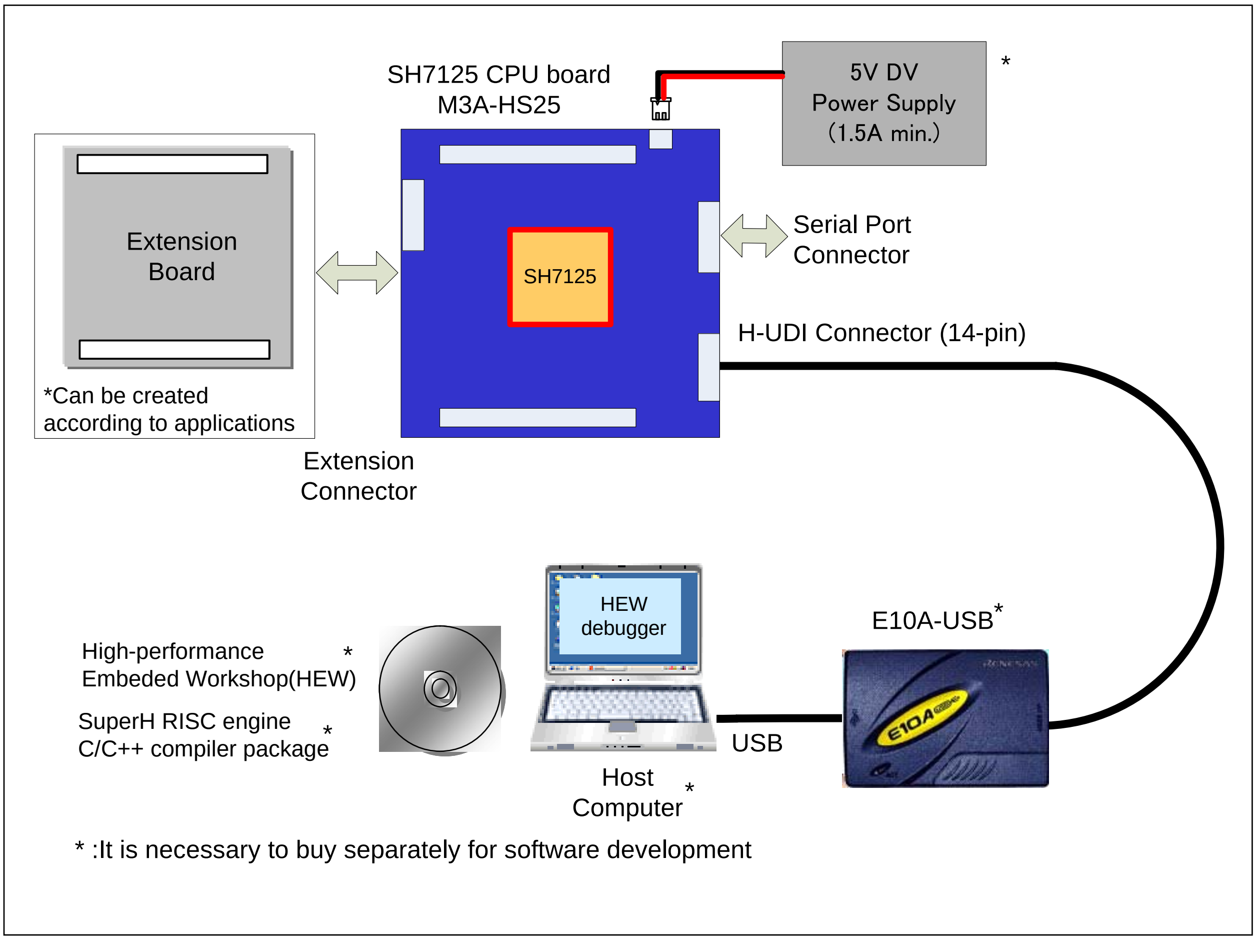


Figure1.2.1 Example System Configuration of the M3A-HS25

1.3 External Specifications

Table1.3.1 lists external specifications of M3A-HS25.

Table1.3.1 External Specifications of M3A-HS25

No.	Item	Content
1	CPU	SH7125 ● Input(XIN) clock : 12.5MHz ● CPU clock : 50MHz, max ● Peripheral clock : 25MHz, max ● On-chip memory Flash memory : 128KB RAM : 8KB
2	Connectors	● Extension connector ● Serial Port connector (D-sub 9pins) ● H-UDI connector (14pins)
3	LED	● POWER LED (1pc.) ● User LED (6pcs.)
4	Switches	● Reset switch (1pc.) ● NMI switch (1pc.) ● IRQ0 switch (1pc.) ● DIP switch for System setting (1pc.,3 poles) ● DIP switch for users (1pc.,4 poles)
5	User through-hole	● User through-hole (12 x 8pc.)
6	External dimensions	● Dimensions : 100mm x 100mm ● Mounting form : 4-layer, double-side mounted ● Board configuration : 1 board

1.4 External View

Figure1.4.1 shows the external view of M3A-HS25.

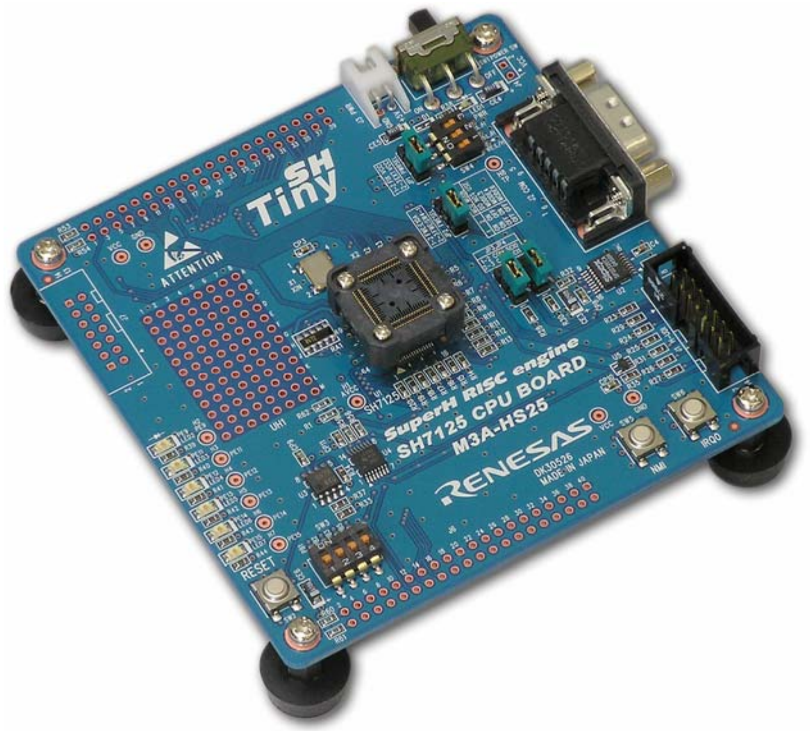


Figure1.4.1 External View of M3A-HS25

1.5 M3A-HS25 Block Diagram

Figure1.5.1 shows the system block diagram of M3A-HS25.

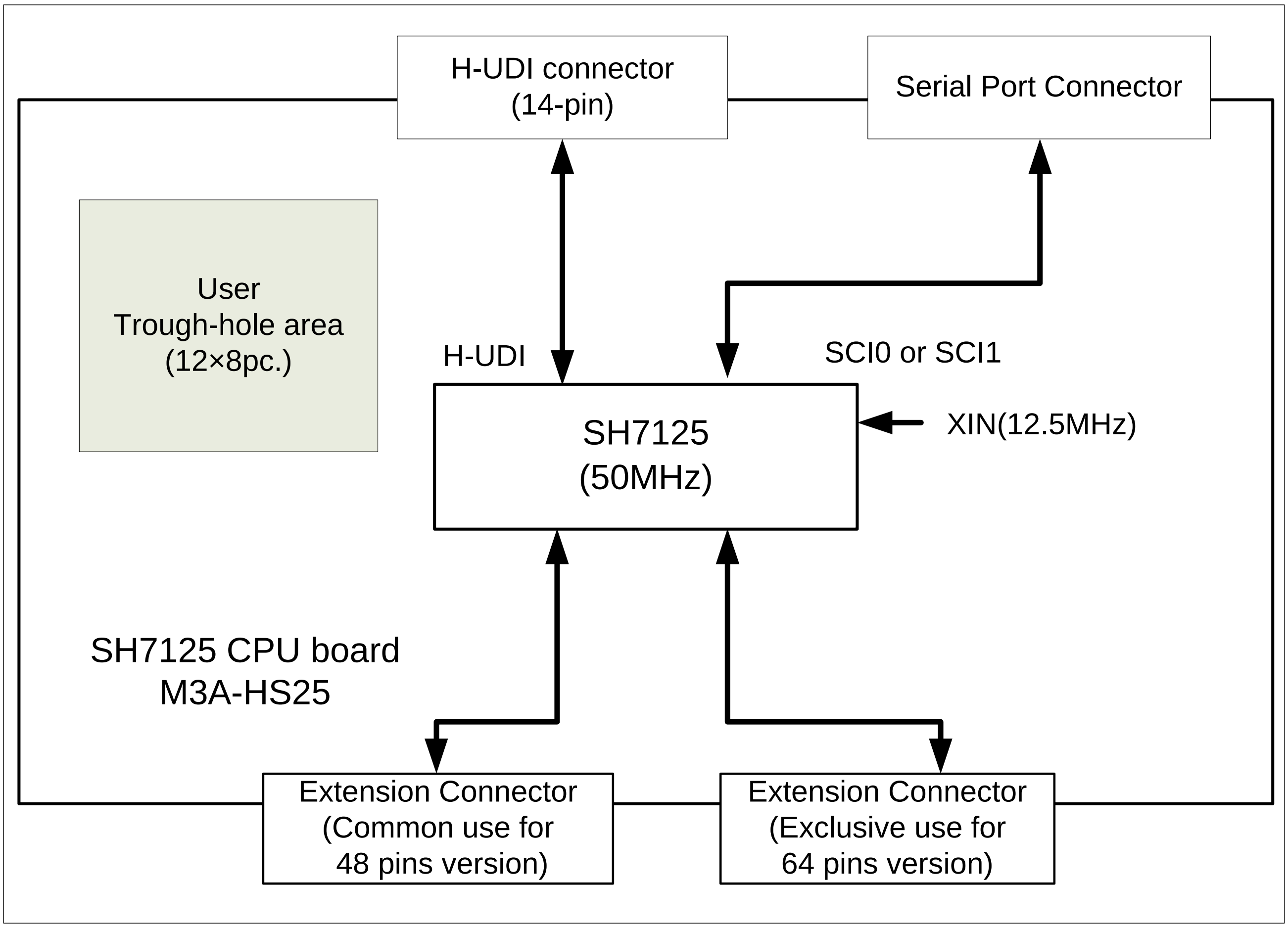


Figure1.5.1 System Block Diagram of M3A-HS25

1.6 M3A-HS25 Board Overview

Figure1.6.1 shows the M3A-HS25 board overview.

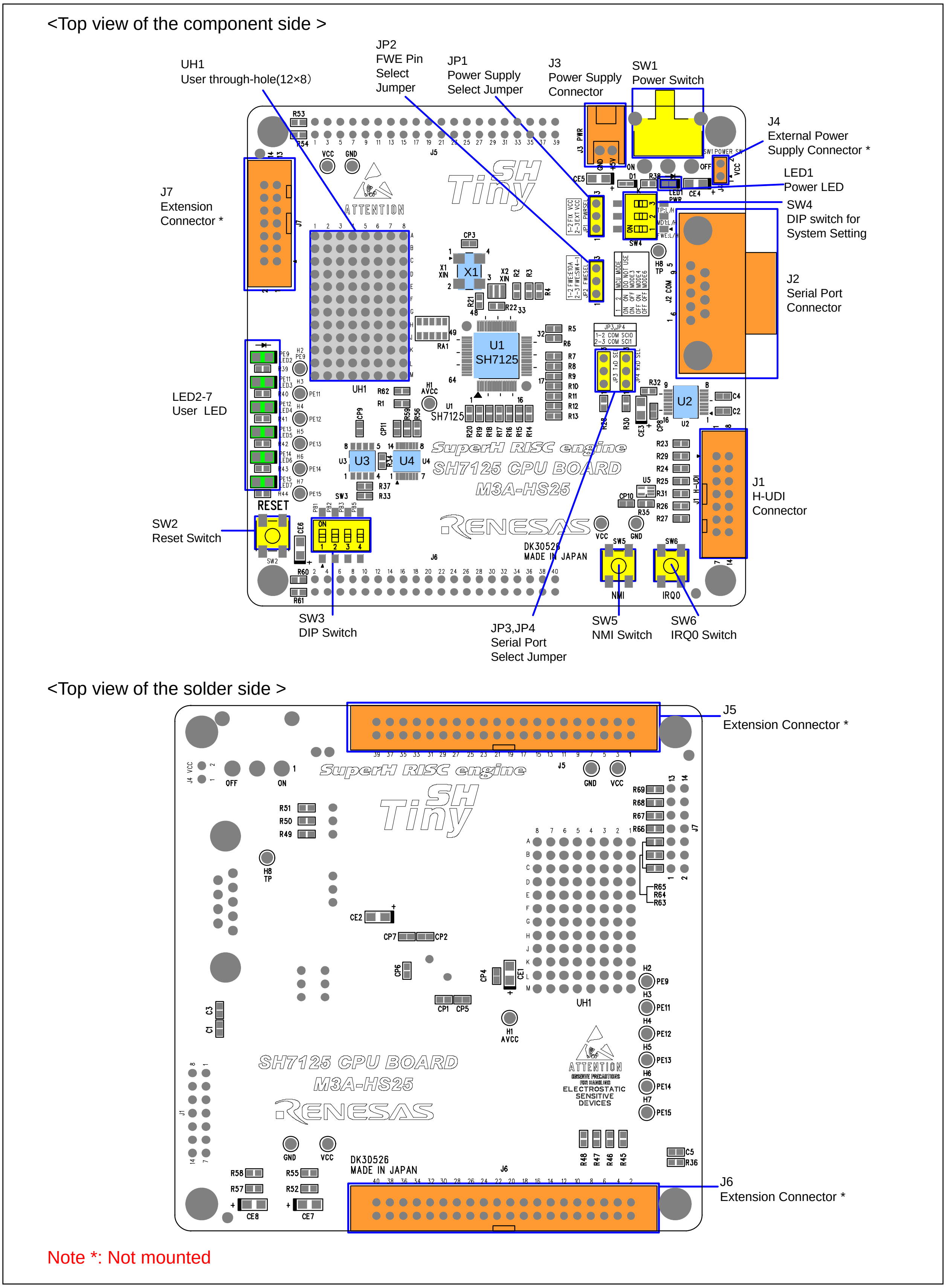


Figure1.6.1 M3A-HS25 Board Overview

Table1.6.1 lists main components mounted in M3A-HS25.

Table1.6.1 Main Components Mounted in M3A-HS25

Symbol	Parts Name	Remarks	Parts number for recommended components that are not mounted
U1	CPU	SH7125 (Renesas)	
U1	CPU Socket	NQPACK064SD	
U2	RS-232C Driver		
U3	Reset IC	M51957BFP (Renesas)	
U4	Logic IC		
U5	Logic IC		
X1	Oscillator	12.5MHz	
X2	Ceramic Resonator	Not mounted	CSTCE-G12M5 (Murata)
J1	H-UDI Connector		
J2	Serial Port Connector		
J3	Power Supply Connector		
J4	External Power Supply Connector	Not mounted	A2-2PA-2.54DSA (Hirose)
J5, J6	Extension Connector	Not mounted	XG4C-4031 (Omron)
J7	Extension Connector	Not mounted	7614-6002 (Sumitomo 3M)
LED1	Power LED	Blue	
LED2 to 7	User LED	Green	
SW1	Power Switch		
SW2	Reset Switch		
SW3	DIP Switch for user		
SW4	DIP Switch for system setting		
SW5	NMI Switch		
SW6	IRQ0 Switch		

1.7 M3A-HS25 Memory Mapping

Figure1.7.1 show a memory mapping example of SH7125 in the M3A-HS25.

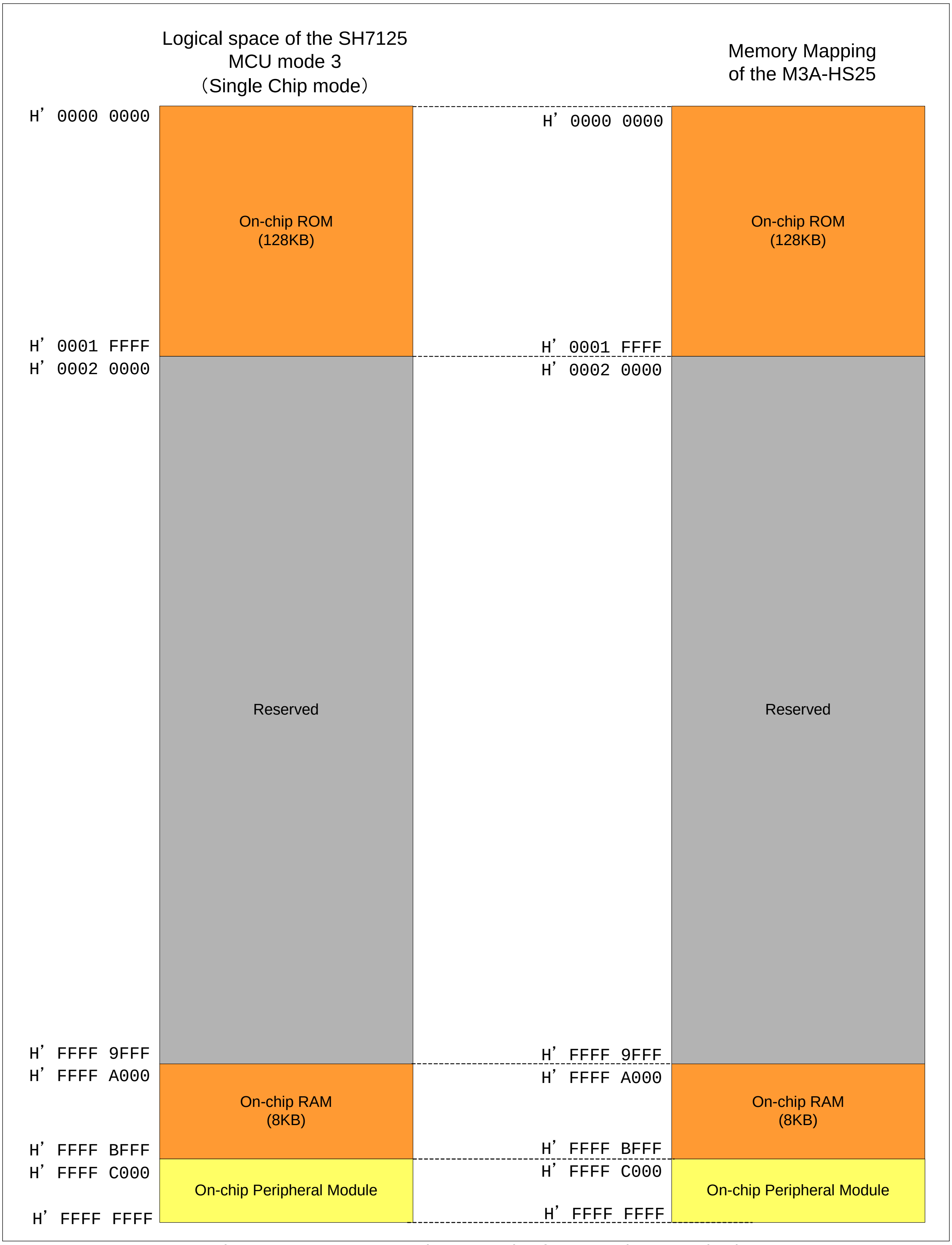


Figure1.7.1 Memory Mapping Example of SH7125 (MCU mode 3)

1.8 Absolute Maximum Ratings

Table1.8.1 lists the absolute maximum ratings of M3A-HS25.

Table1.8.1 Absolute Maximum Ratings of M3A-HS25

Symbol	Parameter	Rated Value	Remarks
VCC	5V System Power Supply Voltage	-0.3V to 6.0V	Relative to VSS
Topr	Operating Ambient Temperature	-5°C to 55°C	No dewdrops allowed. Use in corrosive gas environment prohibited.
Tstr	Storage Ambient Temperature	-10°C to 60°C	No dewdrops allowed. Use in corrosive gas environment prohibited.

Note: The ambient temperature refers to the air temperature in places closest possible to the board.

1.9 Recommended Operating Conditions

Table1.9.1 lists recommended operating conditions of M3A-HS25.

Table1.9.1 Recommended Operating Conditions of M3A-HS25

Symbol	Parameter	Rated Value	Remarks
VCC	5V System Power Supply Voltage	4.75V to 5.25V	Relative to VSS
—	Maximum Current Consumption in the Board	Within 1A	
Topr	Operating Ambient Temperature	0°C to 50°C	No dewdrops allowed. Use in corrosive gas environment prohibited.

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Chapter2

Functional Overview

2.1 Functional Overview

The M3A-HS25 is the SH7125 CPU board that has functions listed in Table2.1.1.

Table2.1.1 lists functional modules of M3A-HS25.

Table2.1.1 Functional Modules of M3A-HS25

Section	Function	Content
2.2	CPU	SH7125 ● Input(XIN) clock : 12.5MHz ● CPU clock : 50MHz, max ● On-chip Memory - Flash memory : 128KB - RAM : 8KB
2.3	Serial Port Interface	Connects SCI0 or SCI1 of the SH7125 to the UART connector
2.4	Input/Output Ports	Connects to the I/O ports of the SH7125
2.5	Clock Module	Controls the system clock
2.6	Reset Module	Controls device reset accommodated by the M3A-HS25
2.7	Interrupt Switches	Controls interrupt (NMI,IRQ0)
2.8	E10A-USB Interface	SH7125 H-UDI interface
-	Operational specifications	Connectors, switches and LEDs ● SH7125 extension connector ● Switches and LEDs ● H-UDI connector Detailed in Chapter 3.

2.2 CPU

The M3A-HS25 contains the 32-bit RISC microcomputer SH7125 that operates with a maximum 50MHz of CPU clock frequency. The SH7125 includes 128-Kbyte flash memory, and 8-Kbyte SRAM, making it useful in a wide range of applications from data processing to equipment control.

The M3A-HS25 can be operated with a maximum 50MHz of CPU clock frequency using a 12.5MHz input clock.

Figure2.2.1 shows the block diagram of SH7125 in the M3A-HS25.

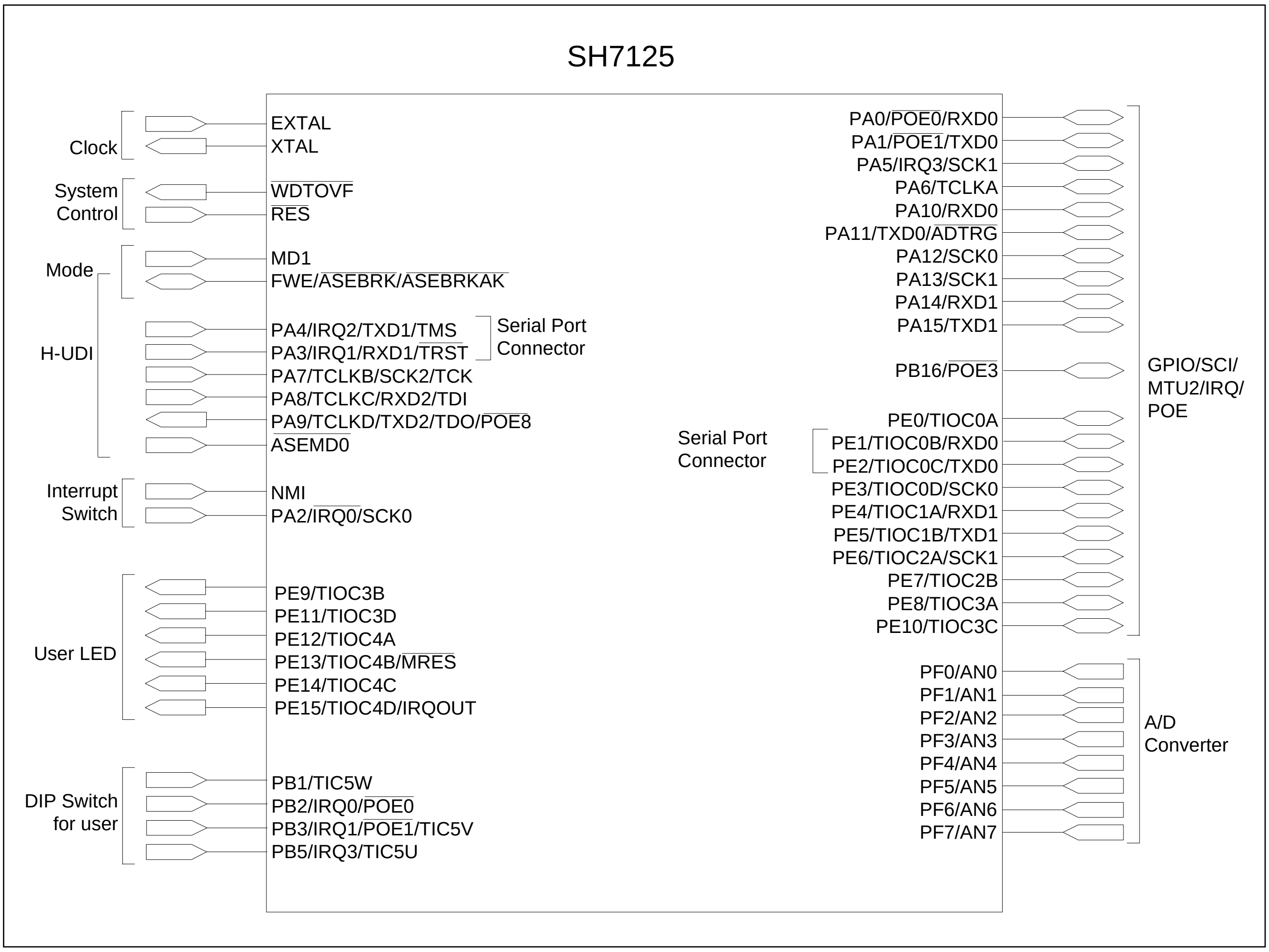


Figure2.2.1 Block Diagram of SH7125

2.3 Serial Port Interface

The SH7125 included in the M3A-HS25 contains a UART module. In the M3A-HS25, the pins of SCI channel 0 or SCI channel 1 can be connected to J2 (Serial Port connector). The pins of SCI channel 1 (RXD1(PA3) pin and TXD 1 (PA4)pin) are also connected to H-UDI connector, and extension connector (J5, J7). Switch the setting of the JP3 and JP4 according to the connector used.

Figure2.3.1 shows the block diagram of serial port interface in the M3A-HS25.

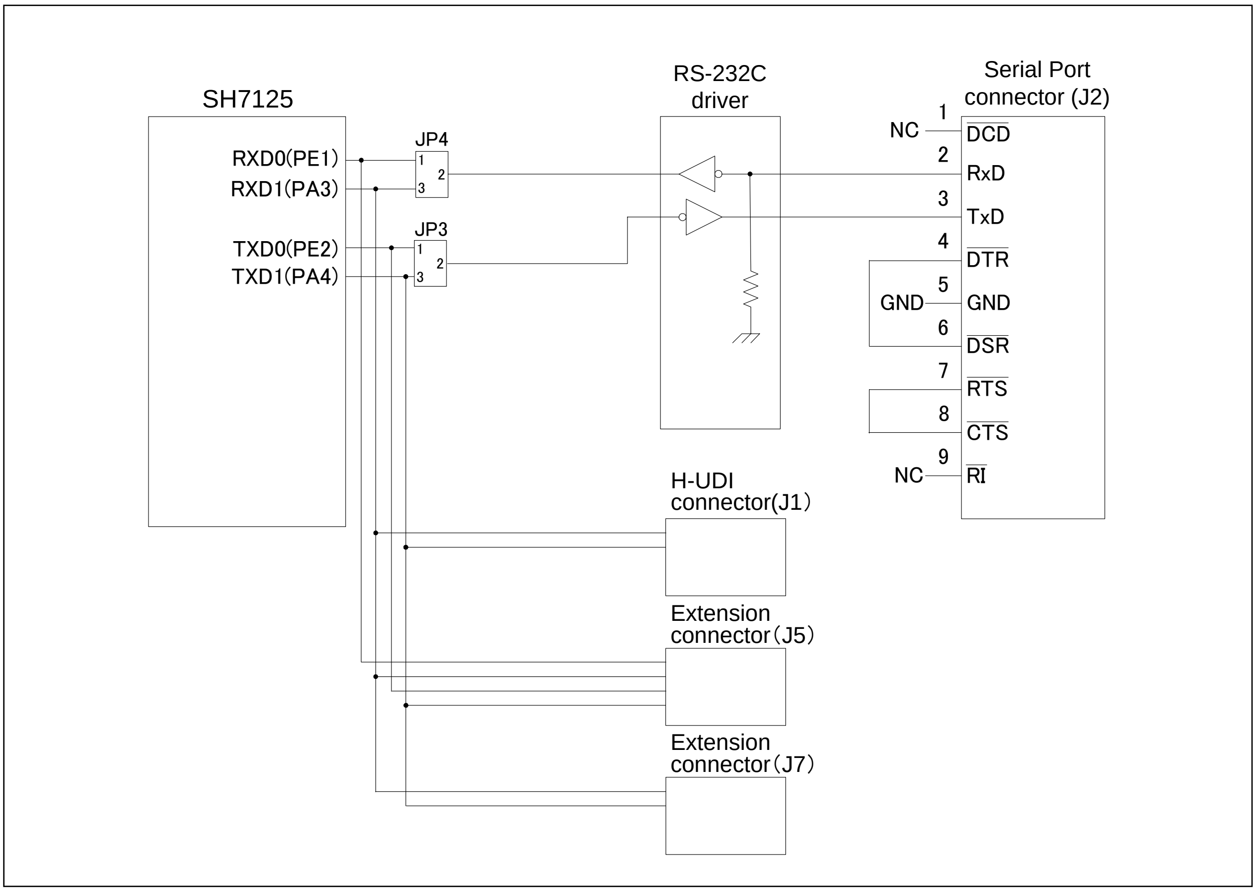


Figure2.3.1 Block Diagram of Serial Port Interface

2.4 I/O Ports

In the M3A-HS25, all of the SH7125's I/O ports are connected to the extension connector. Some I/O ports are connected to DIP switches and LEDs of the M3A-HS25 board. Users are free to use these ports.

Figure2.4.1 shows the block diagram of DIP switch and LEDs in the M3A-H25.

Table2.4.1 shows functions of SH7125 I/O ports in the M3A-HS25.

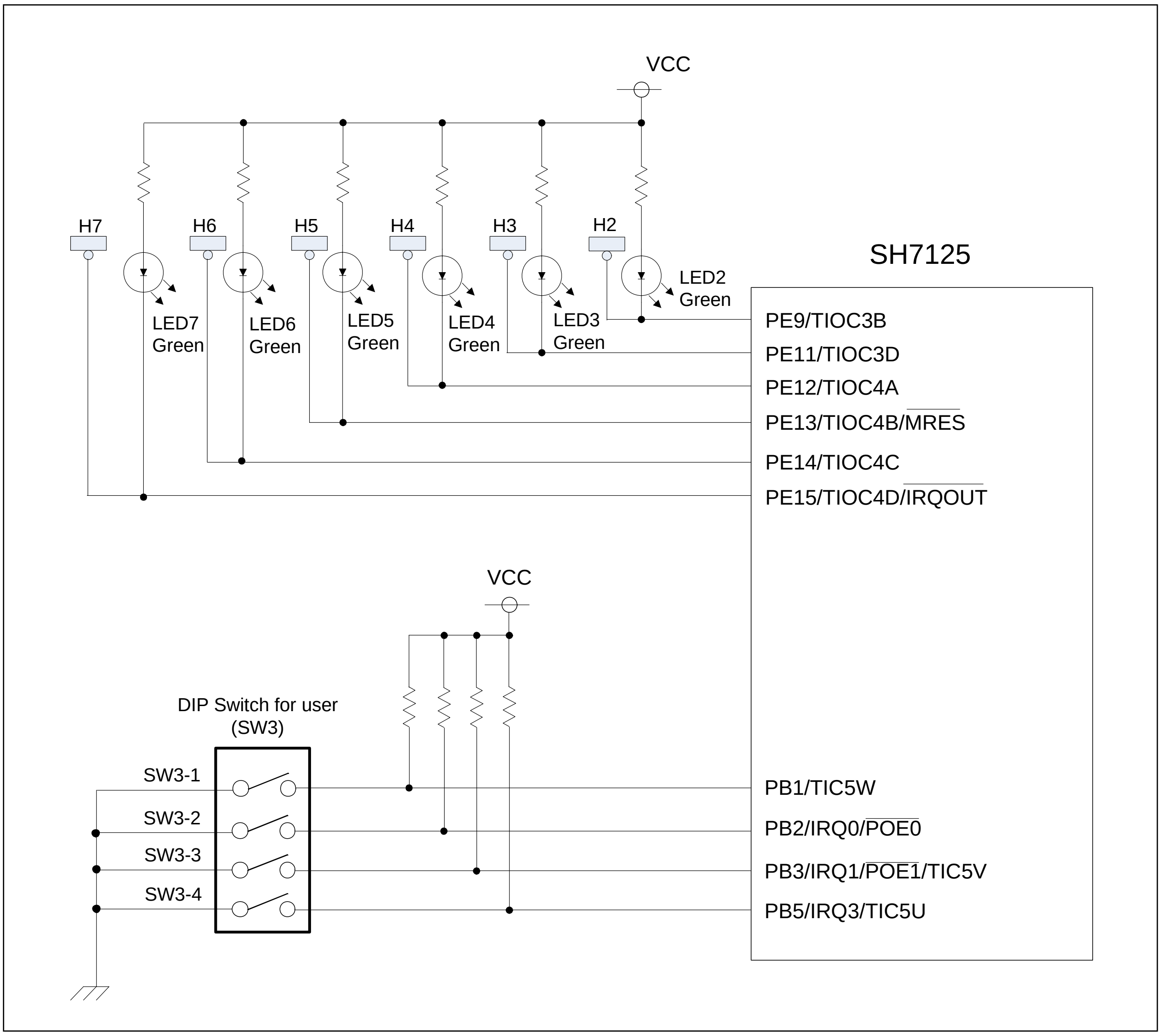


Figure2.4.1 Block Diagram of DIP Switches and LEDs

Table2.4.1 Functions of SH7125 I/O Ports

Port	Pin Name	Connection in the M3A-HS25
PA0	PA0/POE0/RXD0	Extension Connector (J5)
PA1	PA1/POE1/TXD0	Extension Connector (J5)
PA2	PA2/IRQ0/SCK0	Extension Connector (J6), IRQ0 switch(SW6)
PA3	PA3/IRQ1/RXD1/TRST	H-UDI Connector(J1), Extension Connector (J5,J7), Serial Port Select Jumper(JP4)
PA4	PA4/IRQ2/TXD1/TMS	H-UDI Connector (J1), Extension Connector (J5,J7), Serial Port Select Jumper (JP3)
PA5	PA5/IRQ3/SCK1	Extension Connector (J6,J7)
PA6	PA6/TCLKA	Extension Connector (J5,J7)
PA7	PA7/TCLKB/SCK2/TCK	H-UDI Connector (J1) , Extension Connector (J5)
PA8	PA8/TCLKC/RXD2/TDI	H-UDI Connector (J1) , Extension Connector (J5)
PA9	PA9/TCLKD/TXD2/TDO/POE8	H-UDI Connector (J1) , Extension Connector (J5)
PA10	PA10/RXD0	Extension Connector (J6)
PA11	PA11/TXD0/ADTRG	Extension Connector (J6)
PA12	PA12/SCK0	Extension Connector (J6)
PA13	PA13/SCK1	Extension Connector (J6)
PA14	PA14/RXD1	Extension Connector (J6)
PA15	PA15/TXD1	Extension Connector (J6)
PB1	PB1/TIC5W	DIP Switch (SW3), Extension Connector (J5)
PB2	PB2/IRQ0/POE0	DIP Switch (SW3), Extension Connector (J6)
PB3	PB3/IRQ1/POE1/TIC5V	DIP Switch (SW3), Extension Connector (J5)
PB5	PB5/IRQ3/TIC5U	DIP Switch (SW3), Extension Connector (J5)
PB16	PB16/POE3	Extension Connector (J6)
PE0	PE0/TIOC0A	Extension Connector (J5)
PE1	PE1/TIOC0B/RXD0	Extension Connector (J5), Serial Port Select Jumper (JP4)
PE2	PE2/TIOC0C/TXD0	Extension Connector (J5), Serial Port Select Jumper (JP3)
PE3	PE3/TIOC0D/SCK0	Extension Connector (J5)
PE4	PE4/TIOC1A/RXD1	Extension Connector (J6)
PE5	PE5/TIOC1B/TXD1	Extension Connector (J6)
PE6	PE6/TIOC2A/SCK1	Extension Connector (J6)
PE7	PE7/TIOC2B	Extension Connector (J6)
PE8	PE8/TIOC3A	Extension Connector (J5)
PE9	PE9/TIOC3B	User LED(LED2), Extension Connector (J5)
PE10	PE10/TIOC3C	Extension Connector (J5)
PE11	PE11/TIOC3D	User LED(LED3), Extension Connector (J5)
PE12	PE12/TIOC4A	User LED(LED4), Extension Connector (J5)
PE13	PE13/TIOC4B/MRES	User LED(LED5), Extension Connector (J5)
PE14	PE14/TIOC4C	User LED(LED6), Extension Connector (J5)
PE15	PE15/TIOC4D/IRQOUT	User LED(LED7), Extension Connector (J5)
PF0	PF0/AN0	Extension Connector (J5)
PF1	PF1/AN1	Extension Connector (J5)
PF2	PF2/AN2	Extension Connector (J5)
PF3	PF3/AN3	Extension Connector (J5)
PF4	PF4/AN4	Extension Connector (J5)
PF5	PF5/AN5	Extension Connector (J5)
PF6	PF6/AN6	Extension Connector (J5)
PF7	PF7/AN7	Extension Connector (J5)

2.5 Clock Module

The clock module in the M3A-HS25 consists of the following two blocks:

- Output from a oscillator connected to EXTAL of the SH7125
- Ceramic resonator connected to EXTAL and XTAL

The M3A-HS25 has a 12.5MHz oscillator connected to it as standard specification.

Figure2.5.1 shows the block diagram of clock module.

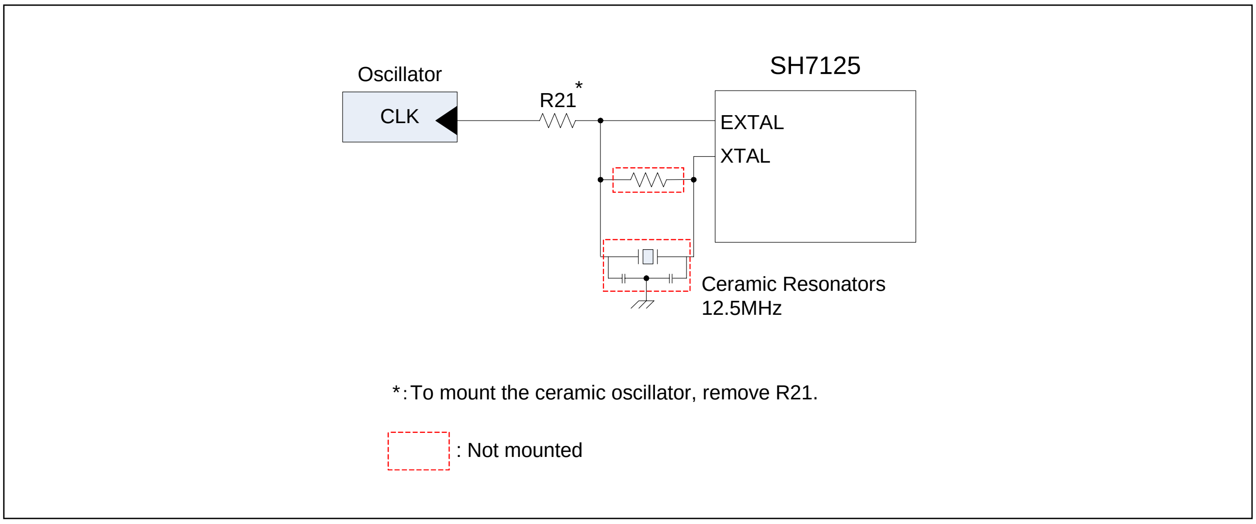


Figure2.5.1 Block Diagram of Clock Module

2.6 Reset Module

This module controls the reset signal connected to the SH7125 mounted on the M3A-HS25.

Figure2.6.1 shows the block diagram of reset module in the M3A-HS25.

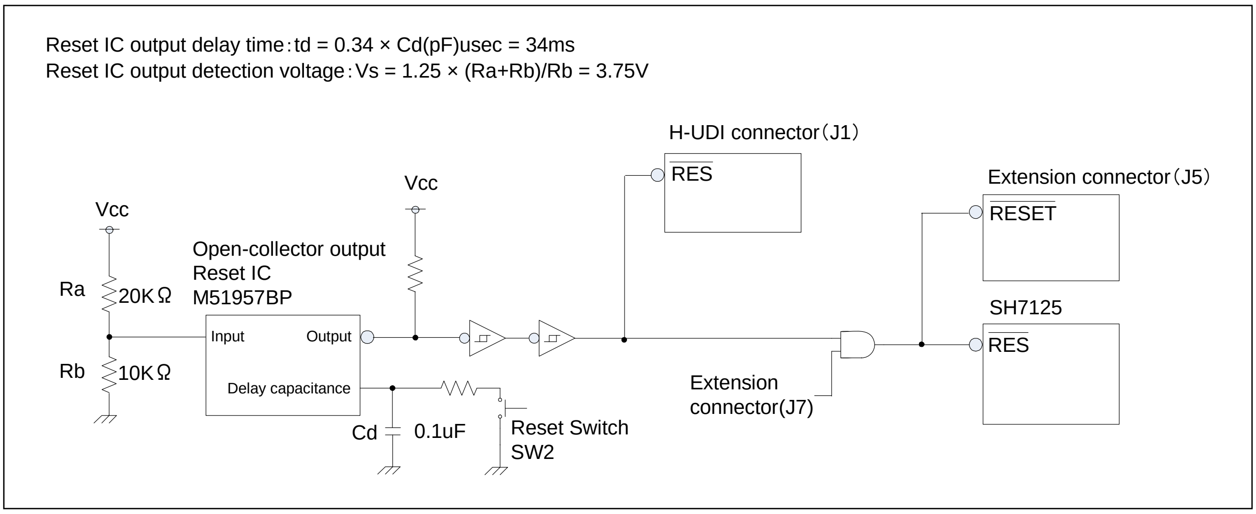


Figure2.6.1 Block Diagram of Reset Module

2.7 Interrupt Switches

In the M3A-HS25, the switch is connected with the IRQ0 pin and NMI pin of the SH7125.

Figure2.7.1 shows the interrupt block diagram in the M3A-HS25.

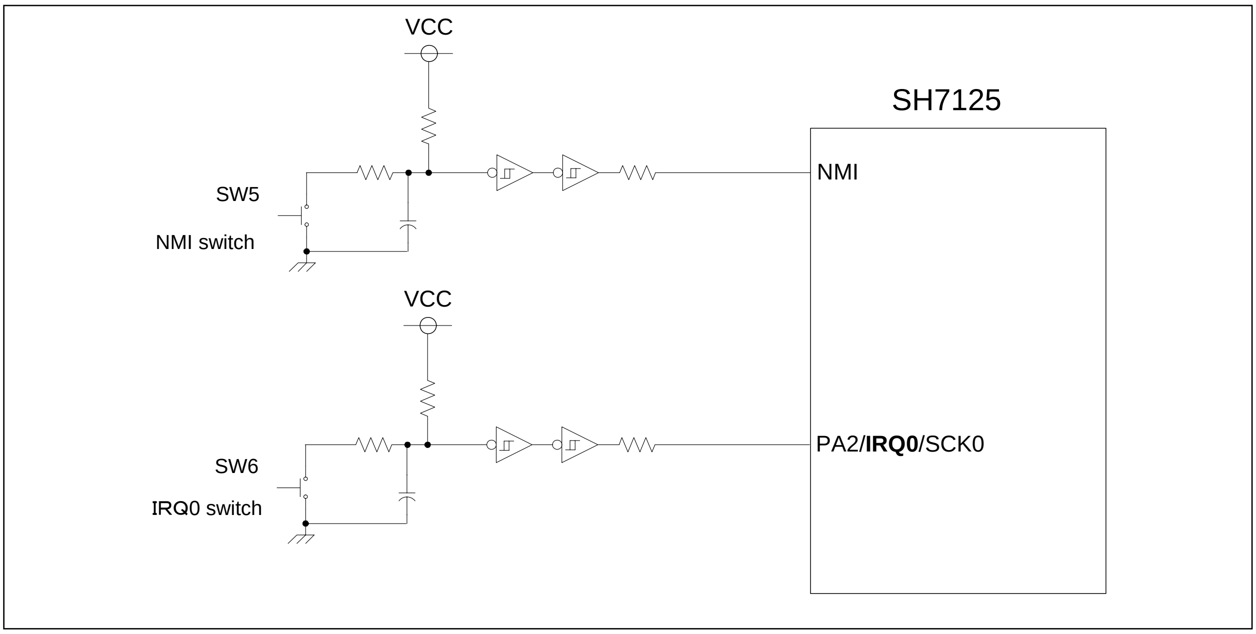


Figure2.7.1 Interrupt Block Diagram

2.8 E10A-USB Interface

The M3A-HS25 has a 14-pin H-UDI connector included in it for connection to the E10A-USB.

TMS pins and TRST pins of SH7125 are multiplexed with transmit/receive pins of SCI channel 1. When H-UDI connector is used, make sure that the settings of JP3 and JP4 are set to 1-2 side.

In addition, H-UDI pin of SH7125 is connected to the extension connector, do not use the applicable pins of the extension connector when debugging with the H-UDI connector.

Figure2.8.1 shows the block diagram of E10A-USB interface.

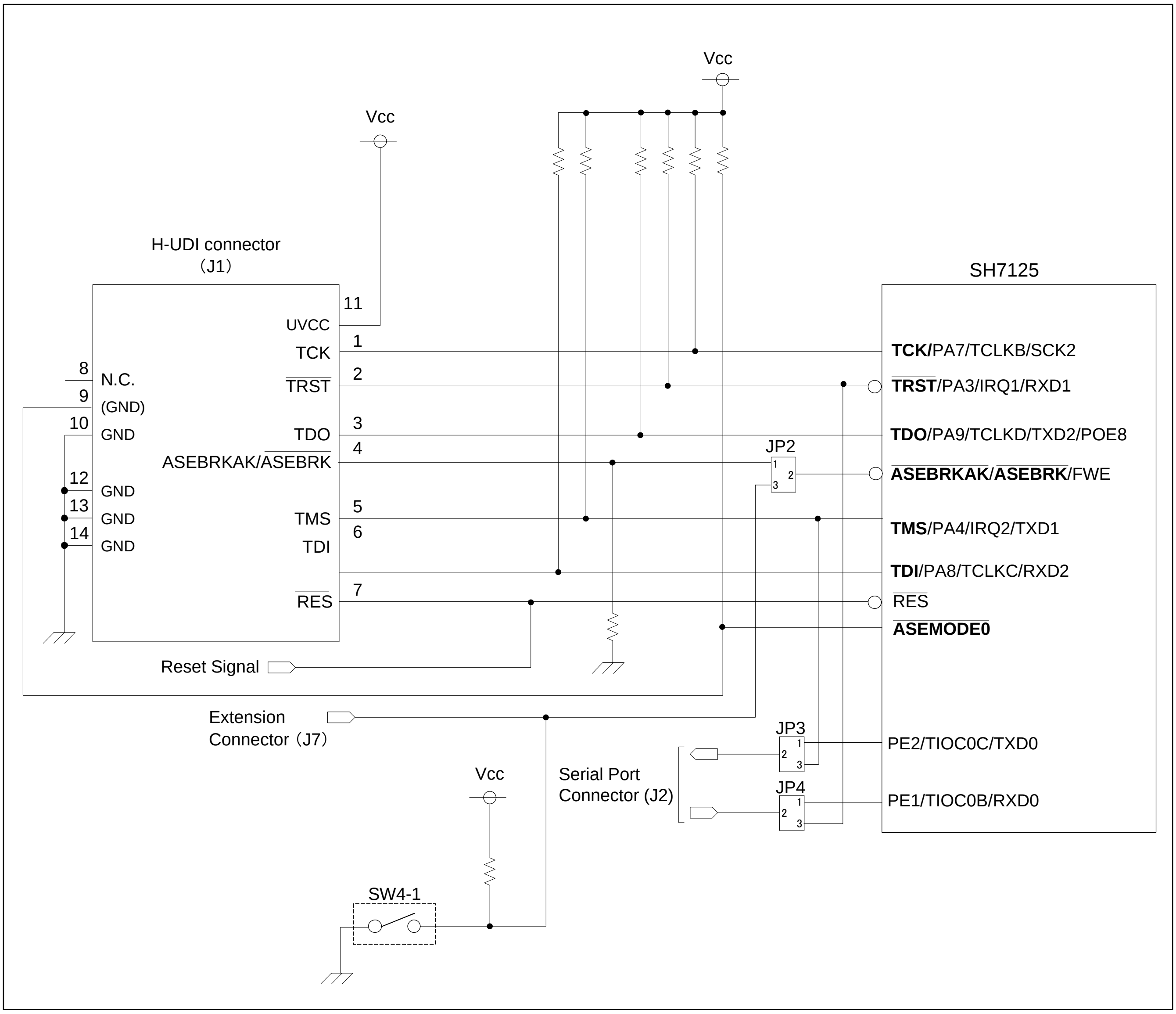


Figure2.8.1 Block Diagram of E10A-USB Interface

Chapter3

Operational Specifications

3.1 M3A-HS25 Connectors Outline

Figure3.1.1 shows the M3A-HS25 connector assignments.

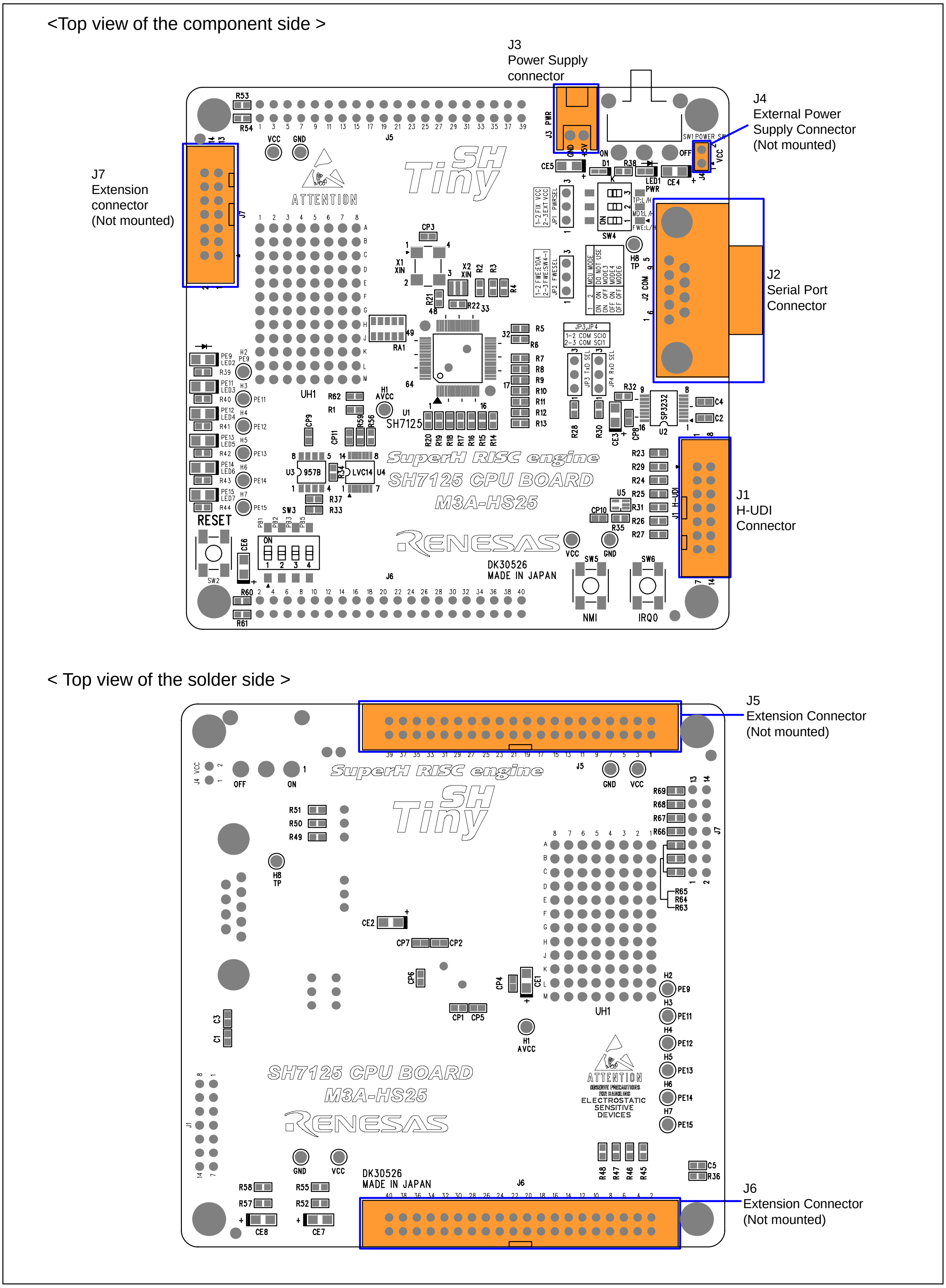


Figure3.1.1 M3A-HS25 Connector Assignments

3.1.1 H-UDI Connector (J1)

M3A-HS25 has the 14-pin H-UDI (J1) connector included in it for connection to the E10A-USB emulator.
Figure3.1.2 shows a pin assignment of H-UDI (J1) connector.

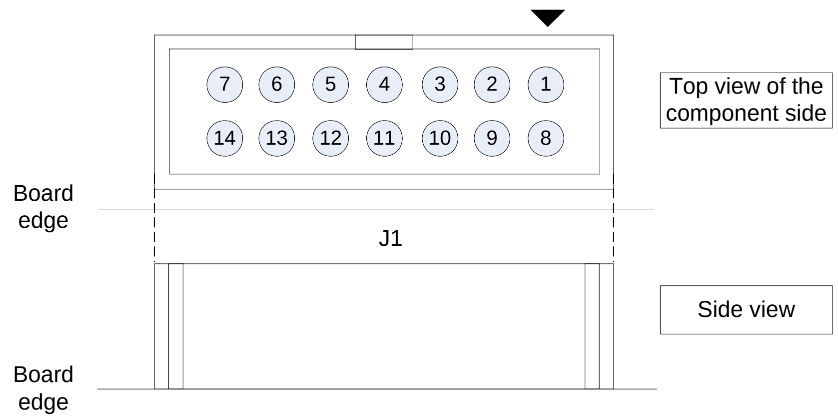


Figure3.1.2 Pin Assignment of H-UDI (J1) Connector

Table 3.1.1 lists pin assignments of H-UDI connector (J1).

Table 3.1.1 Pin Assignments of H-UDI (J1) Connector

Pin	Signal Name	Pin	Signal Name
1	TCK	8	NC
2	$\overline{\text{TRST}}$	9	$\overline{\text{ASEMD0}}$
3	TDO	10	GND
4	$\overline{\text{ASEBRKAK}}$/$\overline{\text{ASEBRK}}$	11	UVCC
5	TMS	12	GND
6	TDI	13	GND
7	$\overline{\text{RES}}$	14	GND

Note: Please note that how to count the pin number is different from its method for the connector manufacturer.

3.1.2 Serial Port Connector (J2)

The M3A-HS25 includes a serial port connector (J2) for serial communication.

Figure 3.1.3 shows a pin assignment of serial port connector.

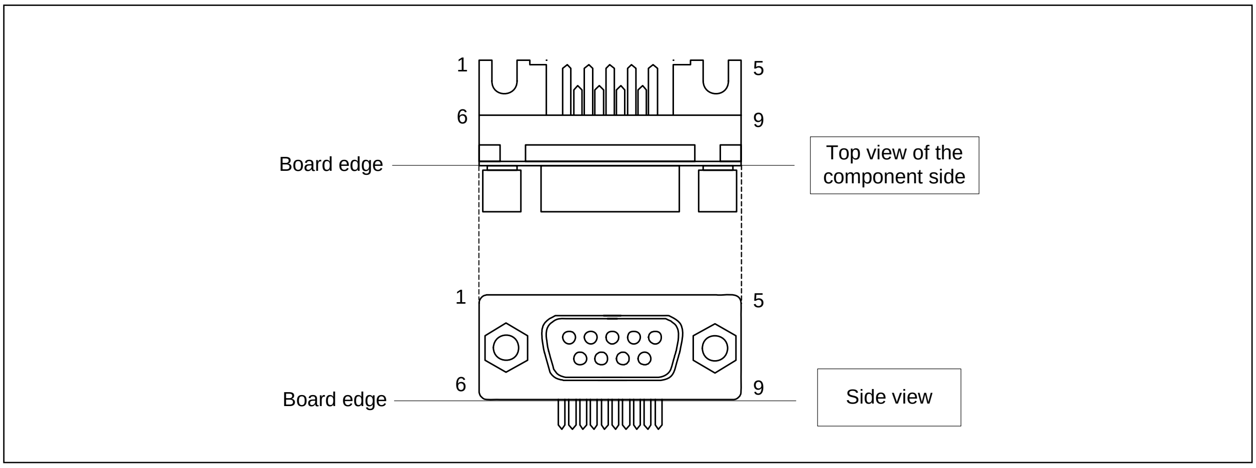


Figure 3.1.3 Pin Assignment of Serial Port Connector (J2)

Table 3.1.2 lists pin assignments of serial port connector.

Table 3.1.2 Pin Assignments of Serial Port Connector (J2)

Pin	Signal Name	Pin	Signal Name
1	NC	6	$\overline{\text{DSR}}$
2	RXD	7	$\overline{\text{RTS}}$
3	TXD	8	$\overline{\text{CTS}}$
4	$\overline{\text{DTR}}$	9	NC
5	GND		

Pins 4-6 are loopback-connected. Pins 7-8 are loopback-connected.

3.1.3 Power Supply Connector (J3)

The M3A-HS25 includes a power supply connector for the board itself.

Figure 3.1.4 shows a pin assignment of power supply connector.

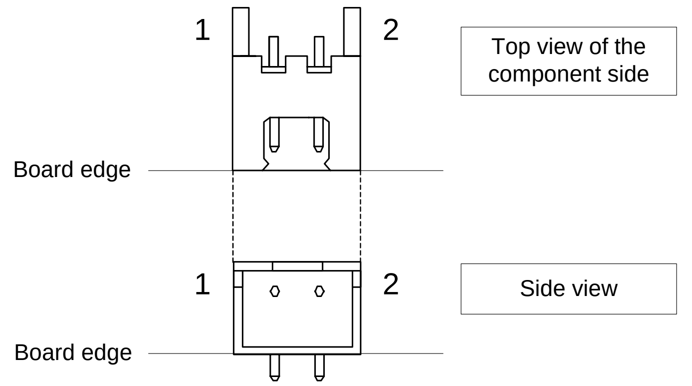


Figure 3.1.4 Pin Assignment of Power Supply Connector (J3)

Table 3.1.3 lists a pin assignment of power supply connector for the M3A-HS25.

Table 3.1.3Pin Assignment of Power Supply Connector (J3)

Pin	Signal Name	Pin	Signal Name
1	+5V	2	GND

3.1.4 External Power Supply Connectors (J4)

The M3A-HS25 includes external power supply connectors for the SH7125.

Figure3.1.5 shows a pin assignment of power supply connector.

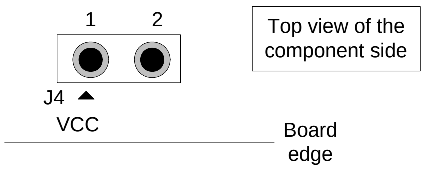


Figure3.1.5 Pin Assignment of Power Supply Connector (J4)

Table 3.1.4 lists pin assignments of power supply connector for the SH7125.

Table 3.1.4 Pin Assignment of Power Supply Connector (J4)

Pin	Signal Name	Pin	Signal Name
1	+5V	2	GND

3.1.5 Extension Connectors (J5,J6)

The M3A-HS25 includes extension connectors to which the I/O pins of the SH7125 are connected.

MIL Standard connectors can be connected to J5 and J6, allowing the user to create an extension board or to monitor the I/O, etc.

In addition, pins of SH7124 (48-pin version) is arranged in the extension connector (J5), so it is possible to be used for a brief evaluation.

Figure 3.1.6 shows a pin assignment of the extension connector(J5,J6).

<Top view of solder side>

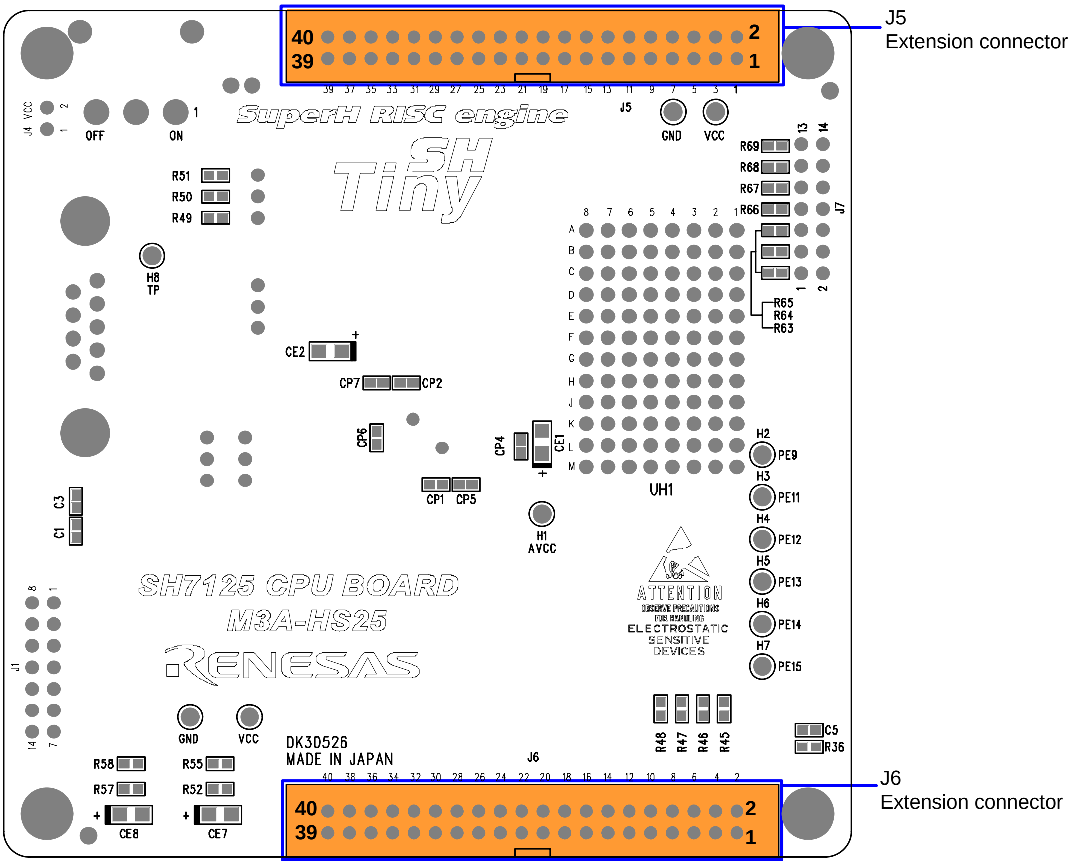


Figure 3.1.6 Pin Assignment of Extension Connectors (J5, J6)

Table 3.1.5 shows pin assignments of extension connector (J5).

Table 3.1.5 Pin Assignments of extension connector (J5)

Pin J5	Signal Name	Other Connection
1	+5V	-
2	+5V	-
3	RES	Reset Module
4	NMI	NMI switch（SW5）
5	WDTOVF	-
6	PA0/POE0/RXD0	-
7	PA1/POE1/TXD0	-
8	PA3/IRQ1/RXD1/TRST	H-UDI connector (J1), Serial Port Select Jumper (JP4), Extension connector (J7)
9	PA4/IRQ2/TXD1/TMS	H-UDI connector (J1), Serial Port Select Jumper (JP3), Extension connector (J7)
10	PA6/TCLKA	Extension connector (J7)
11	PA7/TCLKB/SCK2/TCK	H-UDI connector (J1）
12	PA8/TCLKC/RXD2/TDI	H-UDI connector (J1)
13	PA9/TCLKD/TXD2/TDO/POE8	H-UDI connector (J1)
14	PB1/TIC5W	DIP switch for user (SW3-1)
15	PB3/IRQ1/POE1/TIC5V	DIP switch for user (SW3-3)
16	PB5/IRQ3/TIC5U	DIP switch for user (SW3-4)
17	PE0/TIOC0A	-
18	PE1/TIOC0B/RXD0	Serial Port Select Jumper (JP4)
19	PE2/TIOC0C/TXD0	Serial Port Select Jumper (JP3)
20	GND	-
21	NC	-
22	NC	-
23	PE3/TIOC0D/SCK0	-
24	PE8/TIOC3A	-
25	PE9/TIOC3B	User LED (LED2)
26	PE10/TIOC3C	-
27	PE11/TIOC3D	User LED (LED3)
28	PE12/TIOC4A	User LED (LED4)
29	PE13/TIOC4B/MRES	User LED (LED5)
30	PE14/TIOC4C	User LED (LED6)
31	PE15/TIOC4D/IRQOUT	User LED (LED7)
32	PF0/AN0	-
33	PF1/AN1	-
34	PF2/AN2	-
35	PF3/AN3	-
36	PF4/AN4	-
37	PF5/AN5	-
38	PF6/AN6	-
39	PF7/AN7	-
40	GND	-

Table 3.1.6 lists pin assignments of Extension Connector (J6).

Table 3.1.6 Pin Assignments of Extension Connector (J6)

Pin J6	Signal Name	Other connection
1	+5V	-
2	+5V	-
3	PA2/IRQ0/SCK0	IRQ0 switch (SW6)
4	PA5/IRQ3/SCK1	Extension connector (J7)
5	PA10/RXD0	-
6	PA11/TXD0/$\overline{\text{ADTRG}}$	-
7	PA12/SCK0	-
8	PA13/SCK1	-
9	PA14/RXD1	-
10	PA15/TXD1	-
11	PB2/IRQ0/$\overline{\text{POE0}}$	User DIP switch (SW3-2)
12	PB16/$\overline{\text{POE3}}$	-
13	PE4/TIOC1A/RXD1	-
14	PE5/TIOC1B/TXD1	-
15	PE6/TIOC2A/SCK1	-
16	PE7/TIOC2B	-
17	NC	-
18	NC	-
19	NC	-
20	GND	-
21	NC	-
22	NC	-
23	NC	
24	NC	
25	NC	
26	NC	
27	NC	
28	NC	
29	NC	
30	NC	
31	NC	
32	NC	
33	NC	
34	NC	
35	NC	
36	NC	
37	NC	
38	NC	
39	NC	
40	GND	

3.1.6 Extension Connector (J7)

Extension connector(J7) connects the pins necessary for writing a on-chip flash memory of SH7125.

Figure 3.1.7 shows pin assignments of the extension connectors.

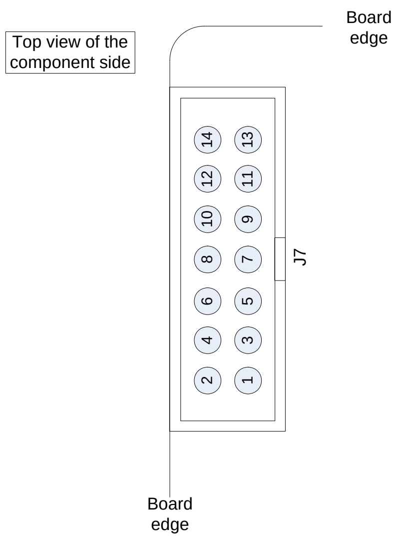


Figure 3.1.7 Pin assignments of the Extension Connector (J7)

Table 3.1.7 lists pin assignments of the extension connector(J7).

Table 3.1.7 Pin assignments of the extension connector (J7)

Pin J7	Signal name	Other connection
1	PA5/IRQ3/SCK1	Extension connector (J6)
2	GND	-
3	NC	-
4	MD1	DIP switch for system setting (SW4-2)
5	PA4/IRQ2/TXD1/TMS	H-UDI connector (J1), Serial Port Select Jumper (JP3), Extension connector (J5)
6	NC	-
7	FWE/ASEBRK/ASEBRKAK *	DIP switch for system setting (SW4-1)
8	VCC	-
9	PA6/TCLKA	Extension connector (J5)
10	NC	-
11	PA3/IRQ1/RXD1/TRST	H-UDI connector (J1), Serial Port Select Jumper (JP4), Extension connector (J5)
12	NC	-
13	RESET	Reset module
14	GND	-

Note *: When FWE pin select jumper (JP2) is set to “2-3”, it is activated.

3.2 User Through-hole

M3A-HS25 has the user trough-holes (12 x 8pc.)

The user trough-holes are not connected to VCC, GND and signal lines, so users are free to use them.

Figure 3.2.1 shows pin assignments of the user trough-hole.

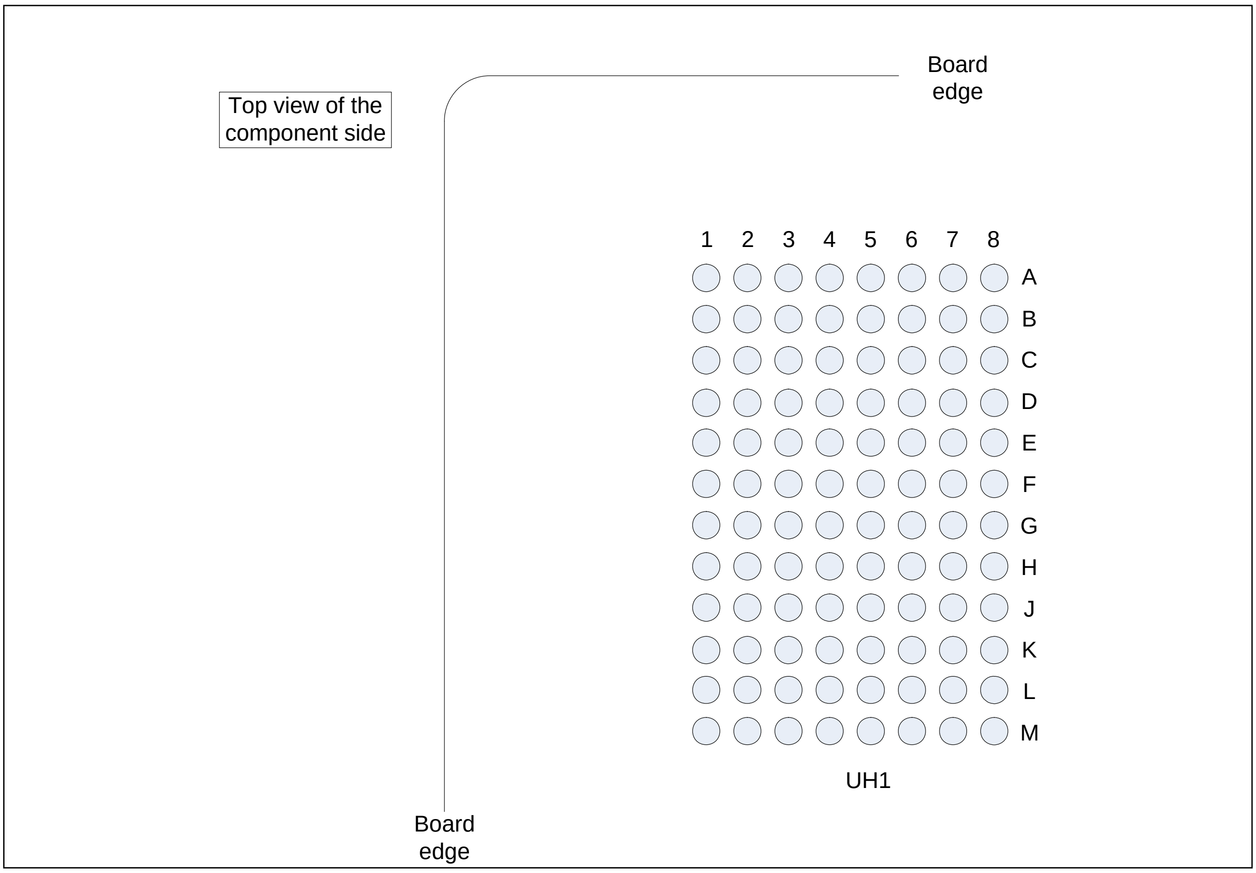


Figure 3.2.1 Pin assignments of the user trough-hole

3.3 Outline of Operational Components

The M3A-HS25 includes switches, jumpers and LEDs as its operational components.

Figure 3.3.1 shows the M3A-H25 operational component assignment.

<Top view of the component side >

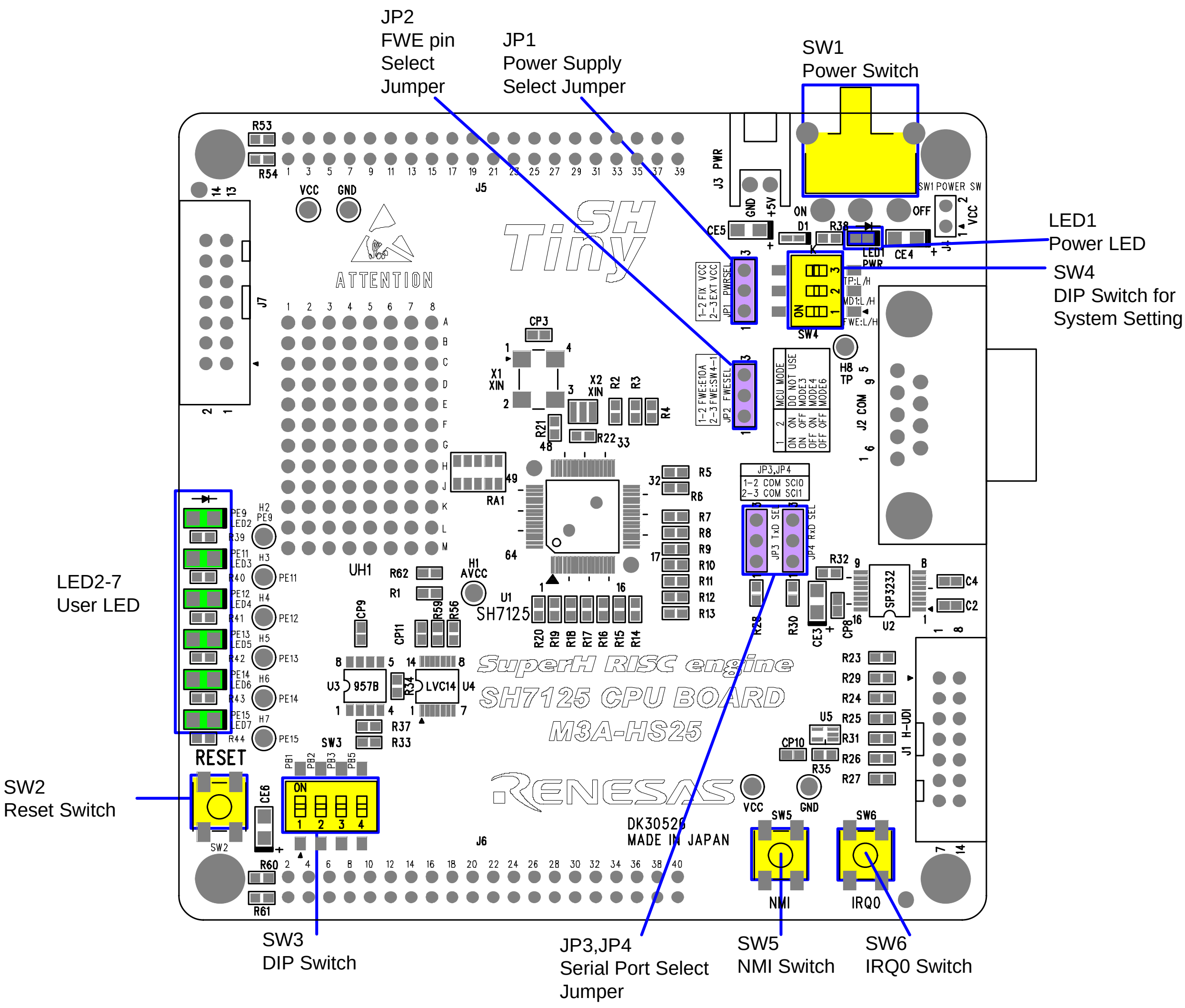


Figure 3.3.1 M3A-H25 Operational Component Assignment

3.3.1 SH7125 Power Supply Select Jumper (JP1)

The JP1 allows the sources for the SH7125 power supply voltages to be selected.
Figure 3.3.2 shows the SH7125 power supply voltage select jumper (JP1) assignment.
Table 3.3.1 lists jumper setting for selecting SH7125 power supply voltage (JP1).

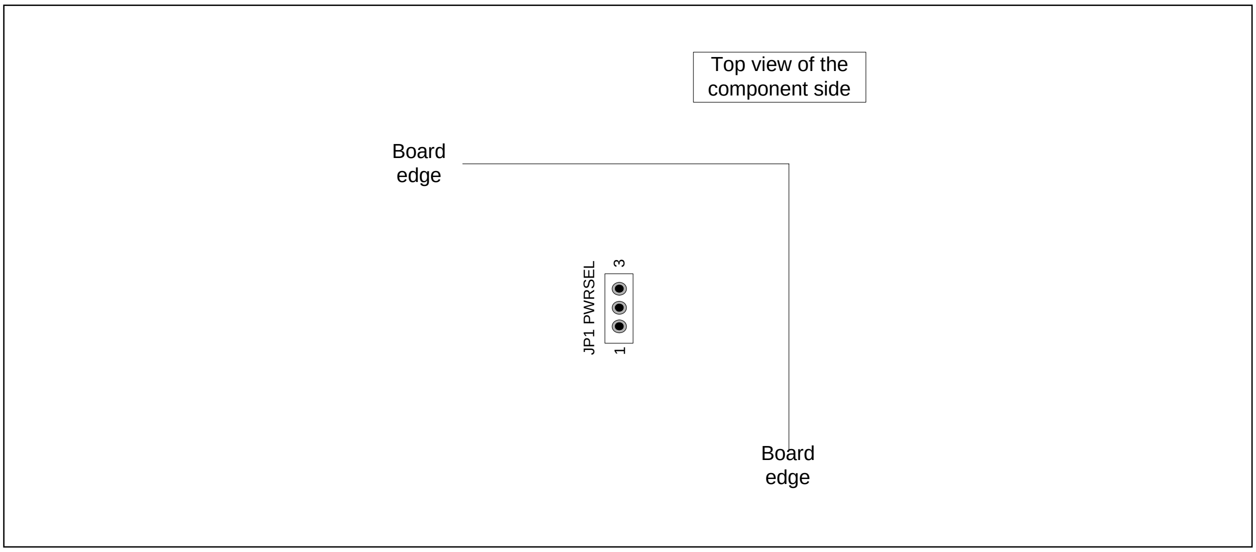


Figure 3.3.2 SH7125 Power Supply Voltage Select Jumper (JP1) Assignment

Table 3.3.1 Jumper Setting for Selecting SH7125 Power Supply Voltage (JP1)

Jumper	Setting	Function
JP1 PWRSEL	1 - 2	5V fixed power supply voltage
	2 - 3	External power supply voltage (supplied from J4)

(shaded): Initial Setting

Note : Do not change jumper settings while the operation of M3A-HS25. Ensure to turn off the power for the M3A-HS25 before changing jumper settings.

3.3.2 FWE Pin Select Jumper (JP2)

The JP2 allows the connection for the FWE/ASEBRK/ASEBRKAK pin to be selected.

Figure 3.3.3 shows the FWE pin select jumper (JP2) assignment.

Table 3.3.2 lists the jumper setting for selecting FWE pin (JP2).

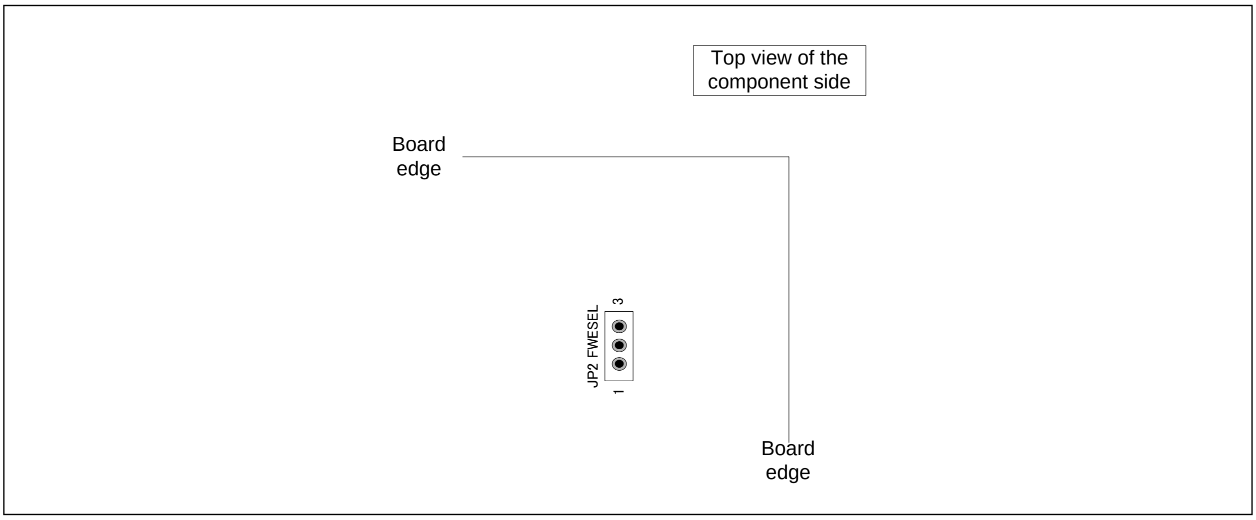


Figure 3.3.3 FWE Pin Select Jumper (JP2) Assignment

Table 3.3.2 Jumper Setting for Selecting FWE pin (JP2)

Jumper	Setting	Function
JP2 FWESEL	1 - 2	The FWE pin of SH7125 is connected with H-UDI connector (J1).
	2 - 3	The FWE pin of SH7125 is connected with DIP switch (SW4-1).

: Initial Setting

Note : Do not change jumper settings while the operation of M3A-HS25. Ensure to turn off the power for the M3A-HS25 before changing jumper settings.

3.3.3 Serial Port Select Jumpers (JP3,JP4)

By setting the JP3 and JP4, the serial port of SH7125 connected to the serial port connector (J2) can be selected. Figure 3.3.4 shows the Serial port select jumper assignment.
Table 3.3.3 and Table 3.3.4 list the jumper setting for selecting Serial port (JP3, JP4).

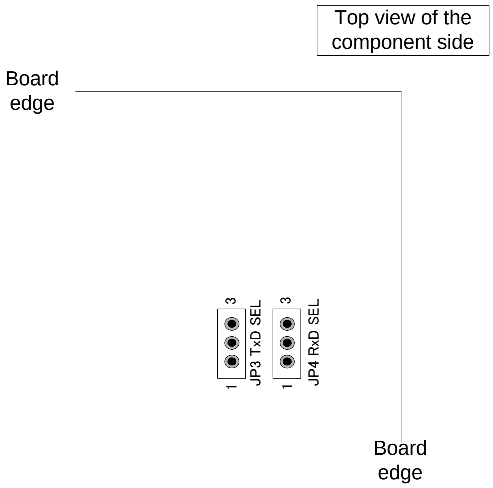


Figure 3.3.4 Serial Port Select Jumper (JP3, JP4) Assignment

Table 3.3.3 Jumper Setting for Selecting Serial Port (JP3)

Jumper	Setting	Function
JP3 TXD1 SEL	1 - 2	The PE2/TIOC0C/TXD0 pin of SH7125 is connected with serial port connector (J2).
	2 - 3	The PA4/TMS/TXD1 pin of SH7125 is connected with serial port connector (J2).

: Initial Setting

Table 3.3.4 Jumper Setting for Selecting Serial Port (JP4)

Jumper	Setting	Function
JP4 RXD1 SEL	1 - 2	The PE1/TIOC0B/RXD0 pin of SH7125 is connected with serial port connector (J2).
	2 - 3	The PA3/TRST/RXD1 pin of SH7125 is connected with serial port connector (J2).

: Initial Setting

Note : Do not change jumper settings while the operation of M3A-HS25. Ensure to turn off the power for the M3A-HS25 before changing jumper settings.

3.3.4 Switch and LED Functions

The M3A-HS25 includes six switches and seven LEDs.

Table 3.3.5 lists switches mounted on M3A-HS25.

Table 3.3.5Switches Mounted on M3A-HS25

No.	Function	Remarks
SW1	System power on/off switch	-
SW2	System reset input switch	ref. section 2.6
SW3	DIP switch for users SW3-1 OFF : PB1=H, ON : PB1=L SW3-2 OFF : PB2=H, ON : PB2=L SW3-3 OFF : PB3=H, ON : PB3=L SW3-4 OFF : PB5=H, ON : PB5=L	PB1, PB2, PB3 and PB5 are pulled up. ref. section 2.4
SW4	DIP switch for CPU mode setting	ref. Table 3.3.6
SW5	NMI input switch	ref. section 2.7
SW6	IRQ0 input switch	ref. section 2.7

Table 3.3.6 lists functions of switch SW4.

SH7125 operating mode is determined by the setting of the MD1 and FWE pins. Table 3.3.7 lists the selection of SH7125 operating modes.

Table 3.3.6 Functions of Switch SW4

No.	Setting	Function	
SW4-1 FWE	OFF	FWE=H (Releasing the writing/erasing protects of on-chip flash memory)	Operating mode setting (ref. Table 3.3.7)
	ON	FWE=L (Setting the writing erasing protects of on-chip flash memory)	
SW4-2 MD1	OFF	MD1 pin state “H”	
	ON	MD1 pin state “L”	
SW4-3 TP	OFF	Test pin (H8) “H”	
	ON	Test pin (H8) “L”	

: Initial Setting

Note: The setting of SW4-1 is activated only when the FWE pin select jumper (JP2) is set to “2-3”.

Table 3.3.7 Selection of SH7125 operating modes

SW4-1 FWE	SW4-2 MD1	SH7125 Operating mode	
		Operating mode	Mode name
ON	ON	-	Setting prohibited
ON	OFF	Mode3	Single chip mode
OFF	ON	Mode4	Boot mode*
OFF	OFF	Mode6	User Programming mode*

: Initial Setting

Note* “Boot mode” and “User Programming mode” mean the programming mode of on-chip flash memory.

Table 3.3.8 lists functions of LEDs mounted in M3A-HS25.

Table 3.3.8 Functions of LEDs Mounted in M3A-HS25

No.	Color	Functions/Remarks
LED1	Blue	Power-on LED (LED1 lights when power is supplied)
LED2	Green	Open to the user (LED2 lights when PE9 outputs “L”)
LED3	Green	Open to the user (LED3 lights when PE11 outputs “L”)
LED4	Green	Open to the user (LED4 lights when PE12 outputs “L”)
LED5	Green	Open to the user (LED5 lights when PE13 outputs “L”)
LED6	Green	Open to the user (LED6 lights when PE14 outputs “L”)
LED7	Green	Open to the user (LED7 lights when PE15 outputs “L”)

3.4 Package Dimensions of M3A-HS25

Figure 3.4.1 shows package dimensions of M3A-HS25.

<Top view of the component side >

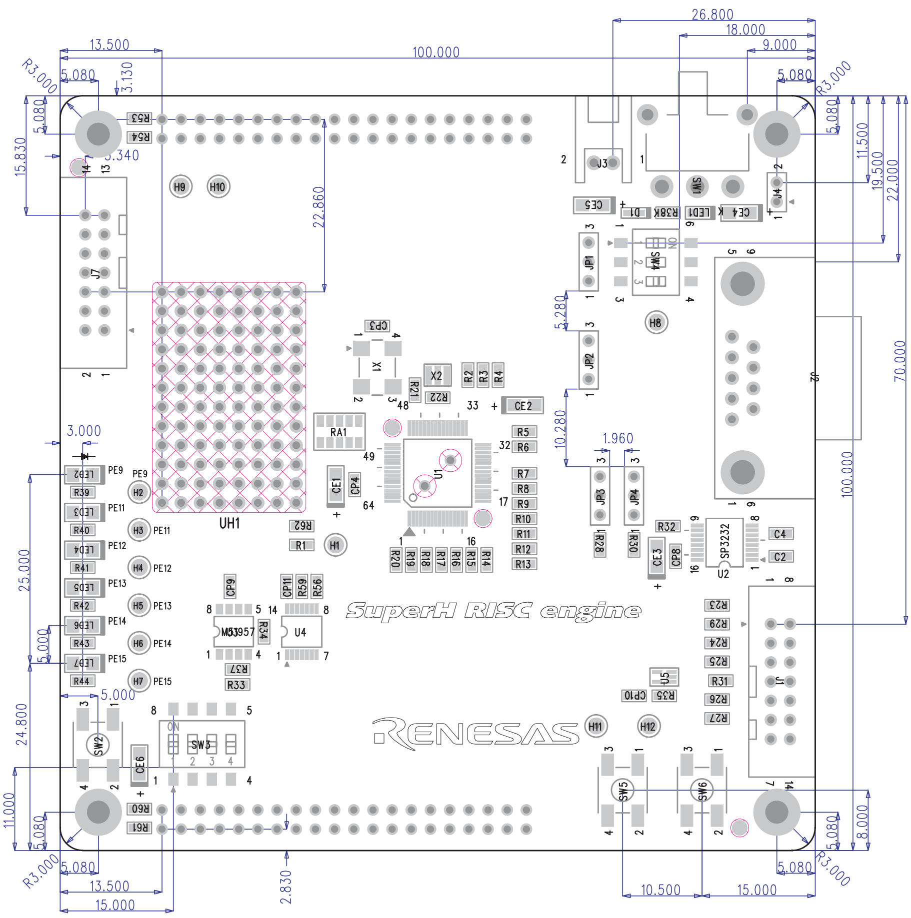


Figure 3.4.1 Package Dimensions of M3A-HS25

Appendix

M3A-HS25 SCHEMATICS

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SH7125 CPU BOARD M3A-HS25 SCHEMATICS

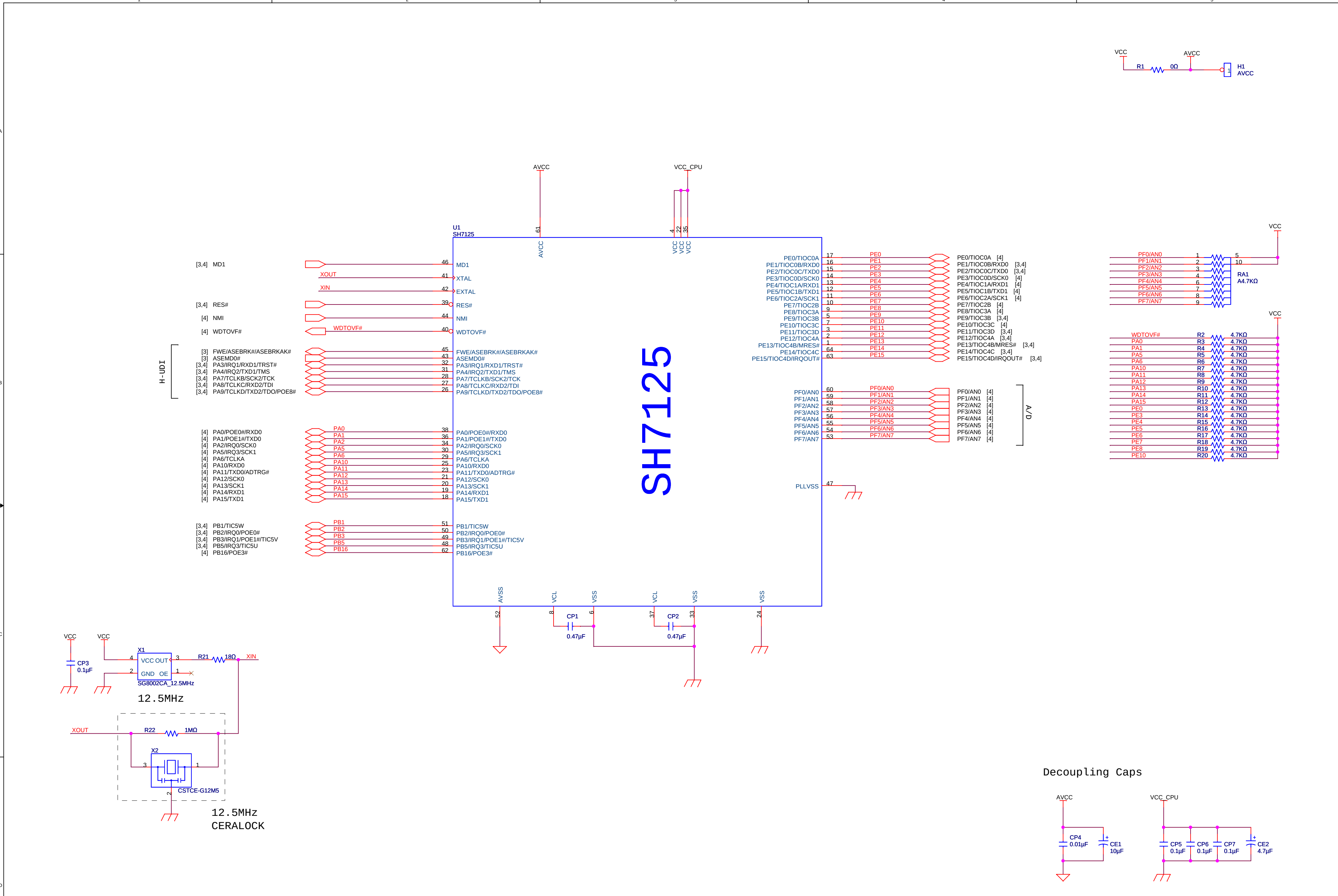
Note:

VCC = 5V

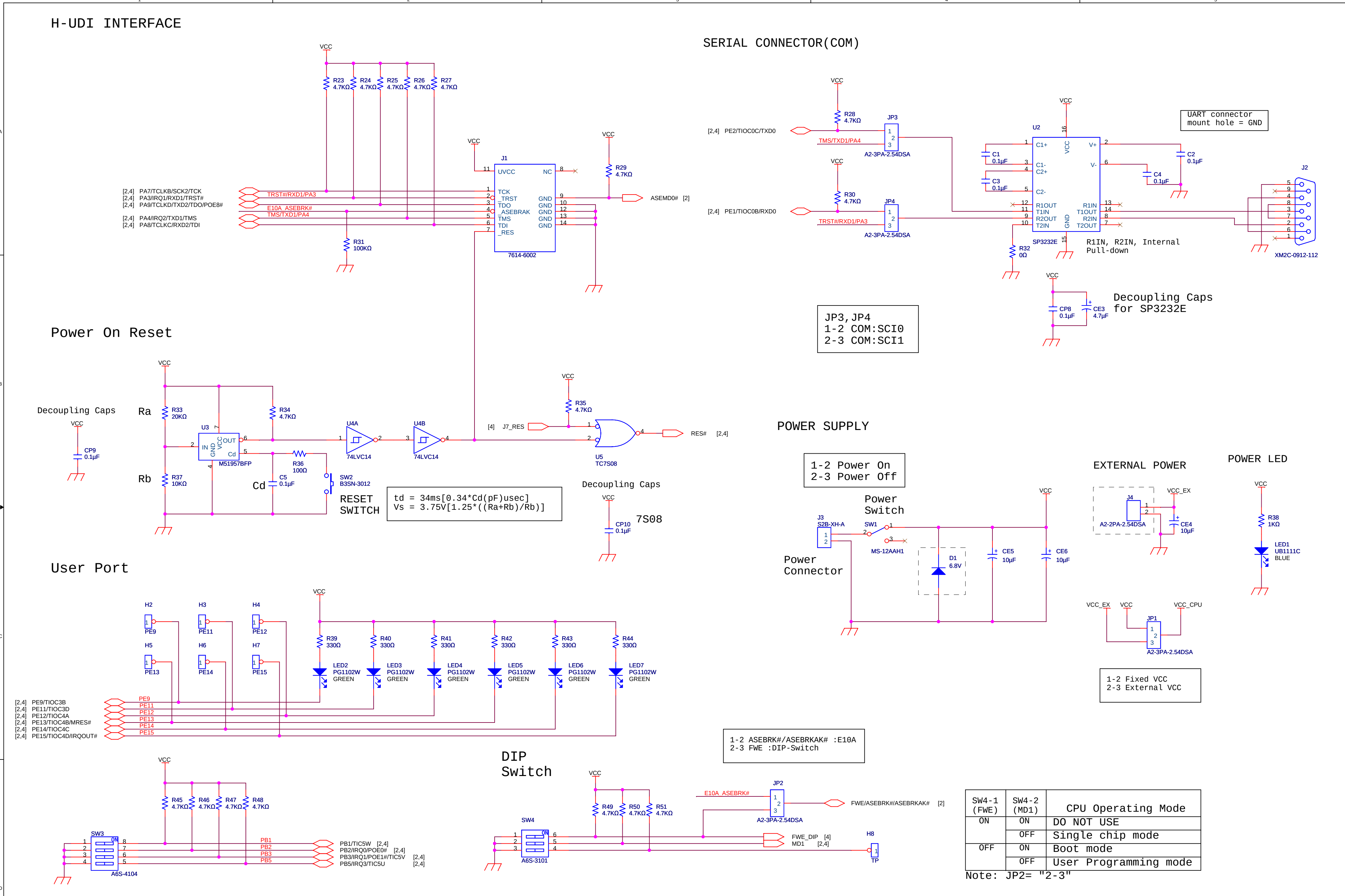
R = Fixed Resistors
RA = Resistor Array
C = Ceramic Caps
CE = Tantalum Electrolytic Caps
CP = Decoupling Caps

[Note] [dashed box] : not mounted

CHANGE				
Ver. 1.0	SCALE		RENESAS SOLUTIONS CORPORATION	M3A-HS25
	DATE	06-07-21	DRAWN / CHECKED / DESIGNED / APPROVED	INDEX (1 / 5)
				DK30526



CHANGE	Ver. 1.0	SCALE		RENESAS SOLUTIONS CORPORATION				M3A-HS25 CPU SH7125 (2 / 5)
		DATE	06-07-21	DRAWN	CHECKED	DESIGNED	APPROVED	DK30526



SW4-1 (FWE)	SW4-2 (MD1)	CPU Operating Mode
ON	ON	DO NOT USE
	OFF	Single chip mode
OFF	ON	Boot mode
	OFF	User Programming mode

Note: JP2= "2-3"

CHANGE	Ver. 1.0	SCALE		
		DATE	06-07-21	

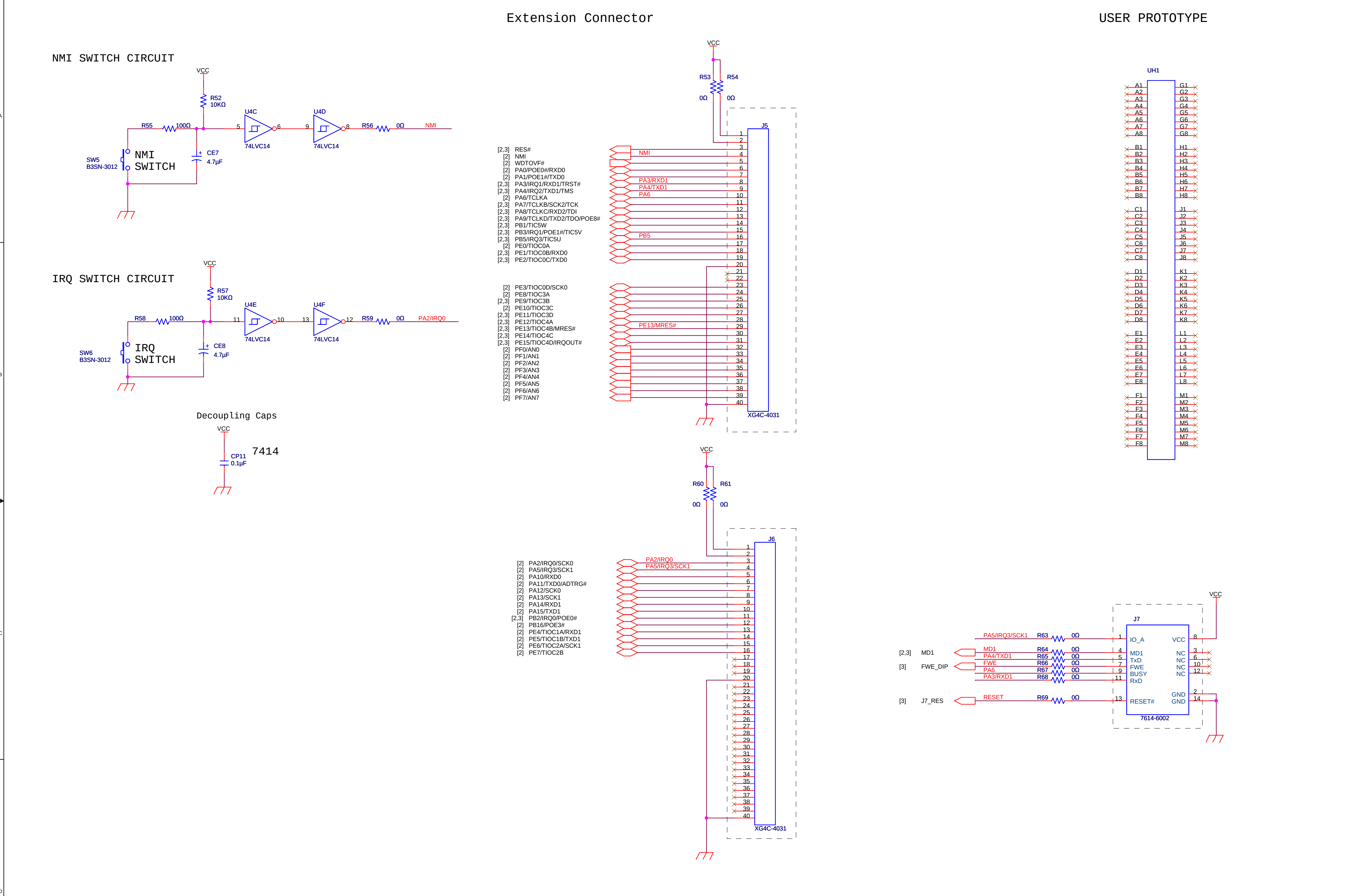
RENESAS SOLUTIONS CORPORATION

DRAWN	CHECKED	DESIGNED	APPROVED

M3A-HS25

H-UDI/RESET/UART/POWER (3 / 5)

DK30526

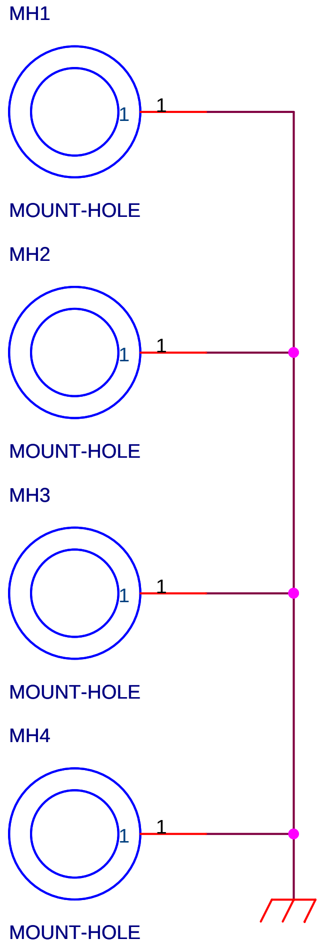


CHANGE		RENESAS SOLUTIONS CORPORATION			M3A-HS25
		DRAWN	CHECKED	DESIGNED	APPROVED
	SCALE				CONNECTORS/PUSH SW (4 / 5)
Ver. 1.0	DATE 06-07-21				DK30526

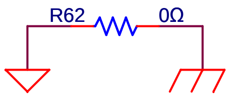
1 2 3 4 5

TEST PIN





AGND-GND



CHANGE

Ver. 1.0

SCALE

DATE 06-07-21

RENESAS SOLUTIONS CORPORATION

DRAWN | CHECKED | DESIGNED | APPROVED

M3A-HS25

OTHERS (5 / 5)

DK30526

1 2 3 4 5

SH7125 CPU Board
M3A-HS25
User's Manual

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M3A-HS25
User's Manual

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